URBAN/MUNICIPAL
CA3 ON HW Q90
88 P63

PROPOSAL HYDROGEOLOGICAL SERVICES - CELL INSPECTIONS GLANBROOK REGIONAL LANDFILL SITE (ITEM 11)

CA30NHW Q90
88 P63

PROPOSAL
HYDROGEOLOGICAL SERVICES - CELL INSPECTIONS
GLANBROOK REGIONAL LANDFILL SITE
(ITEM II)

November 1988
Ref. No. 2752

CONESTOGA-ROVERS & ASSOCIATES

Digitized by the Internet Archive
in 2024 with funding from
Hamilton Public Library

https://archive.org/details/proposalhydrogeo00unse

CRA
Consulting Engineers

CONESTOGA-ROVERS & ASSOCIATES LIMITED
651 Colby Drive,
Waterloo, Ontario, Canada N2V 1C2
(519) 884-0510

FILE NO.
LETTER NO.
NOV 1 8 1988

ENG. PLAN		READ BY
ENG. OPER.		
[illegible]		ANS. BY
[illegible]		FILED BY
ADMIN.		

November 18, 1988

Reference No. 2752

Mr. Val Terluk, Supervisor
Solid Waste Operation
The Regional Municipality of Hamilton-Wentworth
Department of Engineering
71 Main Street West
Hamilton, Ontario
L8N 3T4

Dear Sir:

Please find the enclosed quotation for Item 2 referred to in your letter of October 20, 1988 requesting Hydrogeological Services.

If you have any questions on the enclosed, please do not hesitate to contact us.

Yours truly,

CONESTOGA-ROVERS & ASSOCIATES

for John M. Petrie, M. Sc.

PH/JO/1
Encl.

TABLE OF CONTENTS

	Page
II.1.0.....INTRODUCTION	1
II.2.0.....OBJECTIVES	3
II.3.0.....PROPOSED WORK PLAN	4
II.4.0.....MEETINGS	6
II.5.0.....COST ESTIMATE	7
II.6.0.....PROJECT TEAM PERSONNEL	8
II.7.0.....CORPORATE QUALIFICATIONS OF CRA	10
II.8.0.....SUMMARY	12

II.1.0 INTRODUCTION

On October 20, 1988, Conestoga-Rovers & Associates (CRA) received from the Regional Municipality of Hamilton-Wentworth (RMHW) a request to prepare a four-part proposal for engineering services to implement site monitoring control programs for the Regional Landfill Site in Glanbrook and the Upper Ottawa Street Landfill Site. This proposal, entitled "Hydrogeological Services - Cell Inspections, Glanbrook Regional Landfill Site", represents Item II as described in the RMHW's Request for Proposal (RFP). A copy of the RFP respecting Item I is included with this proposal in Appendix A.

After reviewing the RFP document, CRA assembled a Project Team to address the hydrogeological assessment - cell inspections requested by the RMHW for the Glanbrook Regional Landfill Site. The structure of the Project Team thus reflects CRA's experience in developing, executing and overseeing hydrogeological and environmental monitoring programs at both active and closed landfill sites throughout Ontario and North America. Individual members of the Project Team have been selected on the basis of experience in hydrogeological investigations at similar type of landfill site.

This proposal presents the objectives of the proposed hydrogeological assessment - cell inspections; introduces the Project Team; discusses CRA's corporate qualifications for conducting the required work, discusses the anticipated project schedule and presents a complete cost

estimate for conducting the cell inspections and submitting a formal report detailing the inspections for the Glanbrook site.

II.2.0 OBJECTIVES

Based on the review of the RFP document it is understood that the objectives of this study are as follows:

ITEM II

II.1) To inspect new cell excavations at the Regional Landfill Site in Glanbrook in 1989 in order to determine that cell conditions are hydrogeologically suitable for the deposition of solid waste.

II.2 To prepare formal reports at the completion of each cell inspection detailing the inspection findings. The report will include a sketch of the specific area inspected and provide additional cell preparations if any , that may be required.

This proposal was developed bearing these objectives in mind.

II.3.0 PROPOSED WORK PLAN

CRA has prepared the following proposed work program to address the cell inspection requirements of the Regional Landfill Site in Glanbrook.

The Project Team is prepared to commence work on this project within two weeks of the Contract being awarded. In order to have a good appreciation of the site history and the hydrogeology of the site, it is suggested that prior to conducting the cell inspection program that the RMHW provide the successful consultant with the available background information on the site. This information package should include all engineering diagrams for the proposed and completed cells and geological and hydrogeological reports.

As indicated in the RFP, the inspections of new cell excavations will be conducted in order to determine that the cell conditions are hydrogeologically suitable for the deposition of solid waste. The cell inspections will be conducted by the designated Project Hydrogeologist. It is assumed that the new cell will be completely open and accessible during the inspection. Following each inspection, a formal report reviewing general cell conditions as well as specific areas of concern be prepared. The report will include photographs and a sketch of the specific area inspected based on engineering diagrams provided by the RMHW and will outline additional cell preparations, if any, that may be required.

The project hydrogeologist will liaise with the Ministry of the Environment (MOE) and the RMHW with respect to cell inspections and development requirements.

It is anticipated that one cell inspection will be conducted by the project hydrogeologist in 1989. However, the RMHW indicated that a total of three inspections may be required in 1989.

II.4.0 MEETINGS

During the course of the preparation and subsequent cell inspections, it is proposed consideration be given to holding two meetings. The first meeting between the RMHW and CRA would be to discuss the overall work plan and the hydrogeology of the site and surrounding area.

The second meeting between the MOE, the RMHW and CRA would be to discuss the findings of the cell inspections and to review the inspection report.

It is anticipated that these meetings will be held in the RMHW offices in Hamilton, Ontario. There is a possibility that additional meetings may be required to discuss the findings of additional cell inspections as required by the RMHW.

II.5.0 COST ESTIMATE

The total cost for conducting a program consisting of one cell inspection and report, as outlined in the RFP and detailed in our proposal, is $4,410. The total cost for conducting a total of two cell inspections and two reports is $6,790. The total cost for conducting a total of three cell inspections and three reports is $9170. The breakdown by activity is presented on Table II.5.1. Engineering fees are based on 1988 APEO chargeout rate adjusted by four percent for 1989.

TABLE II.5.1

COST ESTIMATE

HYDROGEOLOGICAL SERVICES - CELL INSPECTION
GLANBROOK REGIONAL LANDFILL SITE

Activity	Item	Quality	Unit Cost	Cost
Project Preparation and Report Review	Project Manager	4 hours	$60	$240
	Project Hydrogeologist	24 hours	$60	$1,440
	Disbursements			$50
			Subtotal	$1,730
Cell Inspection*	Project Hydrogeologist	8 hours	$60	$480
	Disbursements			$150
			Subtotal	$630
Report Preparation*	Project Manager	4 hours	$60	$240
	Project Hydrogeologist	15 hours	$60	$900
	Typing/Drafting	8 hours	$25	$200
	Disbursements			$300
			Subtotal	$1,640
Meetings, Liasion with MOE and RMHW*	Project Hydrogeologist	6 hours	$60	$360
	Disbursements			$50
			Subtotal	$410
			TOTAL	**$4,410**

NOTES:
* Cost per inspection.

II.6.0 PROJECT TEAM PERSONNEL

CRA has assembled a Project Team utilizing key professional and technical staff. The Project Team has the required experience and capabilities to successfully complete this project. Project Team members have been selected based upon their previous experience from work at similar landfill sites throughout Ontario and North America. A brief description of the duties and the qualifications of the Project Team members follows, while detailed curricula vitae are enclosed as Appendix A.

John M. Petrie, M. Sc. - Senior Hydrogeologist and Project Manager
Mr. Petrie, as project manager, will oversee and be actively involved in the direction of all aspects of this project, ensuring that high standards of technical merit are maintained throughout. Mr. Petrie will be briefed regularly during all activities by the project coordinator and will be available to attend meetings as required. Responsibility for scheduling and budget control will be provided by Mr. Petrie.

As senior hydrogeologist, Mr. Petrie will also be responsible for overseeing the technical component of the study.

Mr. Petrie has 12 years of varied hydrogeological experience throughout Canada, the United States, northeast Africa and the Middle East. He is currently responsible for the hydrogeologic assessment at the Waterloo Regional Landfill as well as numerous industrial landfills. Mr. Petrie is also involved with the hydrogeological assessment of a number of closed landfills at Stouffville, West Gwillimbury, East Gwillimbury and Aurora.

Greg M. Pucovsky, M. Sc. - Project Hydrogeologist and Project Coordinator

Mr. Pucovsky, as project coordinator, will be responsible for the day to day management of the Project Team and will provide liaison between the MOE, the RMHW and CRA. Mr Pucovsky will be available to attend all meetings. He will also be responsible for keeping the proper direction of the Project Team, and for keeping the project on schedule and within budget.

As project hydrogeologist, Mr. Pucovsky will be responsible for the technical component of this study. Mr. Pucovsky's duties will include review of existing information, inspection and evaluation of cell conditions, and report preparation.

Mr. Pucovsky has eleven years of varied hydrogeologic experience throughout Canada and the Middle East, and has been involved in numerous hydrogeological assessments of operating municipal landfills and groundwater contamination investigations.

II.7.0 CORPORATE QUALIFICATIONS OF CRA

Conestoga-Rovers & Associates is a Canadian Engineering consulting firm with its head office located in Waterloo, Ontario and four branch offices located in Toronto, Ontario; Niagara Falls New York: Chicago, Illinois; and St. Paul, Minnesota. CRA employs approximately 180 professional and support staff. The professional staff include civil, chemical, biological, geological, mechanical and municipal engineers, hydrologists, geologists, hydrogeologists, chemists and planners. In addition to the full time staff, CRA has a number of specialists associated with the firm who have expertise in such areas as system modelling, statistical methods, soil chemistry and toxicology.

CRA enjoys an international reputation regarding the management of waste disposal on land systems. CRA has extensive expertise in the engineering of domestic and hazardous waste disposal on land systems including locating disposal sites, detailed hydrogeologic investigations, landfill design, pretreatment of waste streams prior to disposal, professional management of operating landfills, design of systems to control gas and contaminant migration, remedial design, leachate collection and treatment including deep well disposal and site monitoring.

In addition to expertise regarding waste disposal on land systems, CRA also has extensive experience in most aspects of environmental engineering which includes environmental audits, hazardous materials handling, inorganic and organic chemistry and analytical quality control and assurance.

Table II.7.1 presents a summary of related landfill investigations that CRA has been involved with in the past. The table includes descriptions of a number of projects which reflect relevant corporate expertise and experience in Ontario landfill monitoring, evaluation and engineering.

TABLE II.7.1

SUMMARY OF RELATED WORK EXPERIENCE

HYDROGEOLOGICAL SERVICES - CELL INSPECTION
GLANBROOK REGIONAL LANDFILL SITE

Bayview Park Landfill Site	On going engineering and environmental monitoring services for remediation works for the closed landfill site. Services include hydrogeologic investigation, design and implementation of leachate collection system, and design and implementation of surface drainage improvements.
Sarnia Landfill Site	Responsibilities include operation and management plan, a hydrogeologic investigation and impact assessment, design and construction of a retrofit periphery leachate collection system, ongoing environmental monitoring and leachate treatability study.
Keele Valley Landfill Site	Providing ongoing engineering services for the development and management of Metro Toronto's primary landfill site.
Waste Management of Canada	Hydrogeologic investigations, ongoing engineering management, and environmental monitoring of four Ontario landfills.
Town of Petrolia	Hydrogeologic investigation, ongoing site development and environmental monitoring of this landfill site.
Region of Waterloo Landfill	Hydrogeologic investigations, site development, leachate collection system design and comprehensive groundwater monitoring program for the landfill.

continued...

TABLE II.7.1

SUMMARY OF RELATED WORK EXPERIENCE

HYDROGEOLOGICAL SERVICES - CELL INSPECTION
GLANBROOK REGIONAL LANDFILL SITE

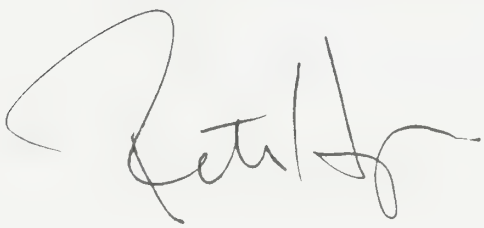
Canada Cement Lafarge	CRA has completed a full hydrogeologic assessment, implemented quarterly environmental monitoring and designed a plan of site operation and management to closure of the on-site landfill.
St. Mary's Landfill Site	Conducted full hydrogeologic assessment and ongoing environmental monitoring.
Dorchester Landfill Site	Conducted full hydrogeologic assessment and ongoing environmental monitoring.
Southwold Landfill Site	Conducted full hydrogeologic assessment and ongoing engineering management and environmental monitoring.
Upper Ottawa Street Landfill	Currently conducting the 1988 environmental monitoring program.

II.8.0 SUMMARY

It is felt that the proposed program will meet the requirements of the RFP. CRA has the necessary personnel and expertise required to successfully complete this project in a timely and cost-effective manner.

We would like to thank the RMHW for the opportunity of submitting this proposal and look forward to discussing it in the near future.

All of which is respectfully submitted,
CONESTOGA-ROVERS & ASSOCIATES



for John M. Petrie, M.Sc.

APPENDIX A

JOHN M. PETRIE, M.Sc.

EDUCATION:

1982-84	M.Sc (hydrogeology), University of Waterloo
1977-78	Diploma in Groundwater Development, Hebrew University of Jerusalem, Israel
1971-74	M.Sc (geology), University of Canterbury, New Zealand
1967-69	B.Sc (geology), University of Canterbury, New Zealand

EMPLOYMENT:

1984-Present	Senior Hydrogeologist Conestoga-Rovers & Associates Limited
1982	Groundwater Geologist Piteau and Associates
1981	Groundwater Geologist Pacific Hydrology Consultants
1978-81	Project Groundwater Geologist Associated Engineering Services Limited
1975-77	Groundwater Geologist B.C. Ministry of the Environment
1974	Mine Geologist Consolidated Churchill Copper Corporation, B.C.
1970-71	Exploration Geologist Layton and Associates Ltd. (N.Z.)

AFFILIATIONS:

Member - International Association of Hydrogeologists

Member - Association of Groundwater Scientists and Engineers

PROFILE OF ACTIVITIES:

- Exploration geology including geochemical and geological mapping of hard rock and unconsolidated formations

PROFILE OF ACTIVITIES: (continued)

- Structural mapping and tectonic interpretation of fold mountain terraines
- Mine geology including grade control, calculations of ore reserves and design of stopes
- Evaluation of hydrogeologic, hydrologic and climate data for regional water balance studies and water supply evaluations
- Evaluation of groundwater potential for irrigation and municipal water supplies
- Contract preparation, well design, supervision of drilling and pumping tests, along with final report preparation, for irrigation and municipal water supplies
- Investigations of groundwater quality problems
- Evaluation of groundwater impacts associated with landfilling operations and hazardous waste sites
- Evaluation of the hydraulic response of clays in layered aquifer systems
- Installation of observation wells, piezometers and multilevel piezometers into uncosolidated materials and bedrock
- Design and performance evaluation of groundwater remediation systems utilizing purge wells
- Hydrogeologic evaluation of remedial alternatives at waste disposal sites
- Evaluation of groundwater monitoring programmes

PUBLICATIONS:

"Well Design and Aquifer Analysis at Fairview Heights Irrigation District", Cawston, B.C. Presented to the Geological Association of Canada Annual Meeting, Vancouver, 1977

"Evolution of Brackish Groundwaters, Saanich Peninsula, Vancouver Island, British Columbia". Presented by senior author to the Geological Association of Canada Annual Meeting, Toronto, 1978 (with A.P. Kohut)

GREG M. PUCOVSKY, M.Sc.

EDUCATION:

B.Sc.	University of Western Ontario, Geology (Honours), 1975
M.Sc.	University of Waterloo, Hydrogeology, 1977
Course	Wilfrid Laurier University, Computer Science (Fortran), 1982
Course	University of Missouri - Rolla, Groundwater Analysis and Design of Dewatering Systems, 1984

EMPLOYMENT:

1986 - Present	Senior Hydrogeologist, Conestoga-Rovers & Associates Limited
1982-86	Hydrogeologist/Project Manager, Hydrology Consultants (Division of Trow Ltd.)
1980-82	Hydrogeologist/Project Manager, MacLaren Plansearch Inc. (Division of Lavalin)
1977-80	Hydrogeologist, James F. MacLaren Ltd.

AFFILIATIONS:

Association of Groundwater Scientists and Engineers (Division of National Water Well Association)

International Association of Hydrogeologists

PROFILE OF PROFESSIONAL ACTIVITIES:

- Completion of numerous groundwater availability and testing investigations throughout Ontario including Innerkip, Sweaburg, Embro, Lakeside, Dorchester, Conestogo, St. Clements, London, Bradford, Mansfield, Blind River, Greenbank and also in New Brunswick and Saudi Arabia

- Conducted hydrogeologic investigations at existing solid waste disposal sites in Waterloo, Brantford, Holmesville, Stratford, Holbrook and also at other existing and proposed sites in Ontario

- Involved in several landfill gas studies

- Conducted groundwater supply investigations involving construction and testing of production wells throughout Ontario

PROFILE OF PROFESSIONAL ACTIVITIES: (cont'd)

- Involved in design and evaluation of temporary and permanent dewatering and pressure relief systems for construction projects in Toronto and Richmond Hill.

- Conducted groundwater interference investigations

- Hydrogeologic evaluation of existing and proposed oil waste disposal sites (landfarm areas) at Sarnia and Mississauga

- Design of groundwater monitoring programs for numerous waste disposal sites in Ontario

- Feasibility of a collector well facility for Fredericton, New Brunswick

- Conducted septic system suitability studies for numerous proposed residential subdivision and existing commercial developments, including Sebringville, Shakespeare, Bradford, Stouffville, Mount Nemo, Lowville, Rockton, Sheffield

- Supervision and evaluation of a groundwater recharge investigation at Mannheim

- Environmental impact evaluations for routing of natural gas pipelines for Union Gas and TransCanada Pipelines

- Application of downhole geophysics techniques for design of groundwater supply wells

- Expert testimony at an Ontario Municipal Board Hearing

PUBLICATIONS:

"The Petrography and Geochemistry of Mississagi Quartzite at Quirke Lake" (University of Western Ontario, 1975)

"The Influence of Agricultural Practices on the Nitrate Concentration in the Unsaturated and Shallow Saturated Groundwater Zones" (University of Waterloo, 1977)

DUKE UNIVERSITY
LIBRARY

HAMILTON PUBLIC LIBRARY
3 2022 21294051 0

DUO-TANG
51258
MADE IN U.S.A.